BlackBerry Application Web Loader
Version 1.0

BlackBerry Application Web Loader Developer Guide

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BlackBerry Application Web Loader overview

The BlackBerry® Application Web Loader is a Microsoft® ActiveX® web-based application loader that third party application developers use to create web pages that enable users to install applications directly on a BlackBerry device. The application web loader provides access to the system resources on a user's computer.

When a user accesses a web page that uses the application web loader and accepts the permission prompt, the web page installs the application web loader on the user's computer. The application web loader uses the .jad and .cod files stored on the web server to install an application on a BlackBerry device connected to the user's computer.

The application web loader supports .cod files only. To install a MIDlet, convert the .jar file to a .cod file. See the *BlackBerry Application Developer Guide , Volume 1: Fundamentals* for more information on compiling .java and .jar files into the .cod file format.

Note: The application web loader cannot be used to install applications from a web page to a third party manufactured or distributed BlackBerry Connect device.

To view a web page code sample that uses the BlackBerry Application Web Loader, on the taskbar, click **Start** > **Programs** > **Research In Motion** > **BlackBerry Application Web Loader 1.0** > **BlackBerry Application Web Loader Sample**.

To access the BlackBerry Application Web Loader Release Notes, on the taskbar, click **Start** > **Programs** > **Research In Motion** > **BlackBerry Application Web Loader 1.0** > **Release Notes**.

To uninstall the BlackBerry Application Web Loader, on the taskbar, click **Start** > **Programs** > **Research In Motion** > **BlackBerry Application Web Loader 1.0** > **Uninstall BlackBerry Application Web Loader**.

Install an application from a web page that uses the application web loader

Make sure your computer meets the following system requirements:

- Microsoft ® Windows® 2000, or Windows XP
- Microsoft ® Internet Explorer 5.0 or greater
- ActiveX® version 8.0 or greater

You also require a BlackBerry enabled device with a USB port.

1. Using a USB connection, connect a BlackBerry device to a computer running Microsoft® Windows® 2000 or Windows XP.
2. Access the web page using the Microsoft Internet Explorer on the computer.
3. Accept the installation of the application web loader on the computer.

Note: If the user connects to the internet from a non-local or non-intranet domain, the application web loader prompts the user for a user name and password.

Once installed, the application web loader communicates with the BlackBerry device connected to the computer and downloads to the device the required .cod files from the web server that hosts the application web loader.

Users do not require the BlackBerry Desktop software to download and install the .cod files.
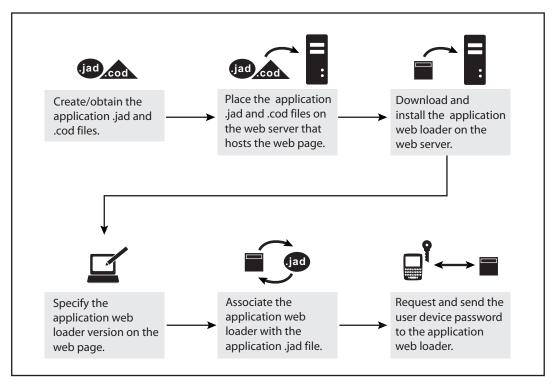
Note: The user requires a USB driver on the computer. When the application web loader connects to a BlackBerry device, the application web loader determines if the user's computer has a USB driver. If a USB driver is not available, the application web loader instructs the user to install the driver.

Enable the application web loader on a web server

To enable the application web loader on a web page, use any scripting language that works with Internet Explorer and ActiveX.

1. Create a web page.
2. Set up the application .jad file.
3. Transfer the .cab, .jad, and .cod files to a web server.
4. Reference a specific version of the application web loader.
5. Send the BlackBerry device password to the application web loader.
6. Associate the application web loader with an application.

For a template of a web page that uses the application web loader, see See "BlackBerry Application Web Loader web page template" on page 14 for more information.

BlackBerry Application Web Loader - Enabling application download from a web page

Set up the application .jad file

Verify that the .jad file for your application references no more than 12 .cod files. If an application .jad file references more than 12 .cod files, the application web loader will be unable to install the application on a BlackBerry device. See the *BlackBerry Application Developer Guide, Volume 1: Fundamentals* for more information on .jad and .cod files.

Transfer the .cab, .jad, and .cod files to a web server

The .jad and .cod files contain information that the application web loader requires to install an application.

1. Place the AxLoader.cab file in the same directory as the web page .html files.

    Note: To place the AxLoader.cab file in a different location, update the `<object>` element URL information in the .html file to the new location.

2. To enable the application web loader to access the application files, place the application .jad file and .cod files on a web server.

Reference a specific version of the application web loader

For the application web loader to install an application on a BlackBerry device, the application web loader on the user's computer must be the same version as the application web loader your web page code uses to install the application. If the versions are not the same and the web page begins to install an application on a BlackBerry device, the web page might try to use a method or property that does not exist in the user's version of the application web loader. Application installation might fail and users might be unable to install an application from the web page.

When you include web page code that specifies an application web loader version number, the Internet Explorer browser uses the version number to determine if the application web loader on a user's computer is the same as the version the web page uses. If the versions are not the same, the Internet Explorer will install the version you specify in the OBJECT ID element on the user's computer. If the versions are the same, the application web loader proceeds with installing the application on the BlackBerry device.

To install a specific version of the application web loader on the user's computer, specify the version number using the CODEBASE element within the OBJECT ID tags.

The following sample code specifies that the application web loader, version 1.0.0.11, be installed on a user's computer:

```
<OBJECT ID="AxLoader"
    CLASSID="CLSID:4788DE08-3552-49EA-AC8C-233DA52523B9"
    CODEBASE='AxLoader.cab#version=1,0,0,11'>
</OBJECT>
```

Send the BlackBerry device password to the application web loader

To install an application on a BlackBerry device with a password set, the device password is required.

To determine if a password is set on a BlackBerry device, use the **AxLoader.state** property.

If this property returns a numeric value of 2, the application web loader will require the device password.

```
if (AxLoader.state == 2) {
    // The BlackBerry Application Web Loader requires a device password
}
```

If a password is set on the BlackBerry device, use the AxLoaderPassword control to obtain the device password from the user. In your web page code, reference the AxLoaderPassword control in the OBJECT ID tag as follows:

```
<OBJECT ID="AxLoaderPassword"
    CLASSID="CLSID:4788DE0A-3552-49EA-AC8C-233DA52523B9">
</OBJECT>
```

Note: The AxLoaderPassword control is included in the AxLoader.cab file.

Use the AxLoaderPassword control to display a password dialog box to the user and store the device password.

```
//Prompt the user for the device password
show('password', 'Connected', "Enter the BlackBerry Password to continue.<br/>(" +
AxLoader.passwordRetries + ") attempts remaining.");
retry.style.display = 'none';

//Give the AxLoaderPassword object focus
AxLoaderPassword.focus();
```

Create code that sends the device password to the application web loader when the user presses the Enter key.

```
//Listen for the user to press the Enter key
function AxLoaderPassword::onEnter() {
providePassword();
}
```

Create code that invokes the `AxLoader` object `submitPassword()` method using the `AxLoaderPassword` object as a parameter. The `AxLoader` object obtains the password from the `AxLoaderPassword` object from shared memory (both controls are loaded in the same process). The application web loader uses the device password to access and install an application on the BlackBerry device.

```
//Submit the device password the user entered
function providePassword() {
AxLoader.submitPassword(AxLoaderPassword);
}
```

Associate the application web loader with an application

Invoke the application web loader `loadJad()` method to load a .jad file. Use a string parameter that represents one of the following:

.jad file location	Parameter
same location as the AxLoader.cab file	the .jad filename
different location than the AxLoader.cab file	the relative location address of the .jad file

```
AxLoader.loadJad("helloworld.jad");
```

Your web page code should only call the `loadJad()` method once. Calling the `loadJad()` method might cause the BlackBerry device to reset.

If you want to use the application web loader to install multiple applications, perform one of the following actions:

Action	Procedure
Install multiple applications at once.	1. On the same web page, list the information for all the applications in the same .jad file.
	2. Associate the .jad file with the application web loader.
Install one application at a time.	1. Set up a web page for each application.
	2. Enable the application web loader on each web page.
	3. On each web page, associate the .jad file for an application with the application web loader.

Enabling application upgrades

To use the application web loader to enable users to upgrade to newer versions of your application, make sure the .cod file name of the upgrade version and the older version are the same. If the .cod file names are different, the application web loader installs the upgrade version in addition to the older version; users might have multiple versions of an application.

Determining the device model and software version number

You might need to know the device model if an application can only be installed on certain BlackBerry devices. You might need to know the device software version number if an application requires a specific version of the device software.

Determine the BlackBerry device model

In your web page code, use the **AxLoader.hwid** property.

```
//Load the helloworld.jad file if the hardware id equals 0x04000000.
function loadFiles() {
var hwid = AxLoader.hwid;
if ((hwid & 0x04000000) == 0x04000000) {
    AxLoader.loadJad("helloworld.jad");
}
else {
    AxLoader.load("helloworld_mono.jad");
    }
}
```

Device model	Hardware ID	Description
BlackBerry 5700 Series of wireless handhelds	0x00000101	MOBITEX® devices
BlackBerry 5800 Series of wireless handhelds	0x80000103	GPRS devices
BlackBerry 6210 Wireless Handheld™	0x80000503	GPRS devices
BlackBerry 6220 Wireless Handheld™		
BlackBerry 6230 Wireless Handheld™	0x90000503	GPRS devices
BlackBerry 6280 Wireless Handheld™		
BlackBerry 6500 Series of wireless handhelds	0x00000505	iDEN™ devices
BlackBerry 6700 Series of wireless handhelds	0x80000403	GPRS devices
BlackBerry 6750 Wireless Handheld™	0x00000104	CDMA devices
BlackBerry 6750 Wireless Handheld™	0x00000404	CDMA devices with GPS support
BlackBerry 7100 Series	0x94000903	color GPRS device
BlackBerry 7100 Series	0x04000905	iDEN devices
BlackBerry 7100 Series	0x04000904	color CDMA devices
BlackBerry 7200 Series of wireless handhelds	0x94000503	color GPRS devices
BlackBerry 7200 Series of wireless handhelds	0x1c000504	color CDMA devices
BlackBerry 7200 Series of wireless handhelds	0x1c000506	color 802.11b devices
BlackBerry 7290 Wireless Handheld™	0x9c000503	color GPRS device
BlackBerry 7510 Wireless Handheld™	0x04000505	iDEN device
BlackBerry 7520 Wireless Handheld™	0x1c000505	iDEN device
BlackBerry 7700 Series of wireless handhelds	0x94000403	color GPRS devices
BlackBerry 7700 Series of wireless handhelds	0x04000404	color CDMA devices
BlackBerry 8700 Series of wireless handhelds	0x84000b03	color GPRS device
BlackBerry Smart Card Reader™	0x00000C08	

Determine the BlackBerry device software version number

Use the **AxLoader.version** property. The following example uses this property to test whether an application supports the BlackBerry device software.

```
var version = AxLoader.version;
if (version.indexOf("3.6") != 0 &&
version.indexOf("3.7") != 0 &&
version.indexOf("3.8") != 0 &&
version.indexOf("4.0") != 0 &&
version.indexOf("4.1") != 0) {
    show('load', 'Connected', "Click this link to load the Hello World Application to the
    connected BlackBerry.");
    break;
}
```

Retrieving the status of the application web loader

> To manage and control the application web loader throughout the application installation process, use the **AxLoader.state** property.

Value	Description
0	cannot find USB drivers on the BlackBerry device
1	cannot detect the BlackBerry device
2	a user password is required
3	successfully connected to a BlackBerry device
4	loading an application on the BlackBerry device
5	an error occurred while connecting to a BlackBerry device or loading an application:
	1 - ERROR_UNABLE_TO_CONNECT
	2 - ERROR_DEVICE_IS_FULL
	3 - ERROR_UNABLE_TO_DOWNLOAD
	4 - ERROR_UNABLE_TO_CREATE_LOCAL_COPY
	5 - ERROR_INVALID_FILE
	6 - ERROR_LOAD_FAILED
	7 - ERROR_OUT_OF_MEMORY
6	successfully installed an application on a BlackBerry device

Create code that performs actions based on the status of the application web loader:

```
switch(AxLoader.state) {
case 0:
// The BlackBerry Application Web Loader cannot find USB drivers on the BlackBerry device
// Tell the user to obtain USB drivers

case 1:
// The BlackBerry Application Web Loader does not detect the BlackBerry device.
// Inform the user that the application web loader cannot find the BlackBerry device

case 2:
// The BlackBerry Application Web Loader requires a device password
```

```
// Prompt the user for the device password
```

BlackBerry Application Web Loader web page template

The following code sample uses HTML and JScript® to demonstrate how to create a web page that uses the application web loader.

Example: BlackBerry Application Web Loader sample code

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN"> <HTML><HEAD><TITLE>Loader page for
Hello World Application</TITLE></HEAD>

<body bgcolor="#FFFFFF" lang=EN-CA link=blue vlink=navy alink="#FF0000"
onload="update();">

<p><h1>Hello World Application</h1></p>
<p>
 Hello World Application description.
</p>
<hr>
<center>

<div>
    <style>
        TABLE {margin-left:1.5em; font:x-small 'Tahoma'; margin-right:1.5em; align:center}
        TD {vertical-align:center; align:center; font-weight:bold}
        TR {padding:0}
        BODY {font:x-small 'Tahoma'; margin-right:1.5em; color:#000099}
        H2 {text-size:large; color:#000099}
        .bd {border:2px solid gray;padding-left:5px;padding-right:5px;padding-
        top:2px;padding-bottom:2px;cursor:hand}
    </style>

    <!-- Use this element to specify the required version of the BlackBerry Application Web
    Loader -->
    <OBJECT ID="AxLoader"
        CLASSID="CLSID:4788DE08-3552-49EA-AC8C-233DA52523B9"
        CODEBASE='AxLoader.cab#version=1,0,0,11'>
    </OBJECT>

    <div align='center' style='border=2px solid gray'>
    <br/>
        <b><h1>Hello World Application</h1></b>
        <h2 id='title'></h2>
        <div id='message' align='center'>
    <br/>
    </div>
    <br/>

    <div id='sections'>
        <div id='password' align='center' style="display:'none'">

        <!-- Use this element to provide a user password to the BlackBerry Application Web
        Loader. The web page does not handle the password directly. -->
```

```
<OBJECT ID="AxLoaderPassword" CLASSID="CLSID:4788DE0A-3552-49EA-AC8C-
233DA52523B9"></OBJECT>
<br/><br/>
<a class='bd' onmousedown="providePassword()"
onkeydown="if(window.event.keyCode==13){providePassword();}">Enter</a>
</div>

<div id='load' align='center' style="display:none">
<strong>Note: </strong>Your BlackBerry device might reset after loading.<br/>
<br/>
<a class='bd' onmousedown="loadFiles()"
onkeydown="if(window.event.keyCode==13){loadFiles();}">Load</a>
</div>

<div id='progress' align='center' style="display='none'">
<span id='progress_bar' style='background-color:#6897C6;width=0;height=10;font-
size=9px;color=white;text-align=center'>0%</span>
</div>

</div>

<br/>
<a class='bd' id='retry' style="display:none" onmousedown="releaseHold()"
onkeydown="if(window.event.keyCode==13){releaseHold();}">Again</a>
<br/>

</div>

<div style="display:block" id="debugInfo"/>

<script language=JScript>
function AxLoader::progressUpdate() {
    progress_bar.innerText = AxLoader.progress.toString() + "%";
    progress_bar.style.width = AxLoader.progress * 120 / 100;
}

function AxLoader::stateChanged() {
    update();
}

function AxLoaderPassword::onEnter() {
    providePassword();
}

function releaseHold() {
    AxLoader.reset();
}

function providePassword() {
    AxLoader.submitPassword(AxLoaderPassword);
}

function show(section, titletext, html) {
    var count = sections.children.length;
    for (i=0; i<count; i++) {
        element = sections.children(i);
        if (element.id == section) {
```

```
        element.style.display = 'block';}
      else {
        element.style.display = 'none';}
      }
    title.innerHTML = titletext;
    message.innerHTML = html;
}



function update() {

debugInfo.innerText = AxLoader.debugInfo;

var state = AxLoader.state;

if ("" + state == "undefined") {
    show('message', 'Unable to create the loader Active X Control', "Please review your
    security settings and user priviledges on this machine.");
    return;
}

switch(AxLoader.state) {
case 0:// The BlackBerry Application Web Loader cannot find the BlackBerry USB driver.
    show('message', 'No Driver', "The BlackBerry USB Driver is not installed.");
    retry.style.display = 'none';
    break;
case 1:// The BlackBerry Application Web Loader does not detect the BlackBerry device.
    show('message', 'No BlackBerry Found', "To install the Hello World Application,
    connect your BlackBerry to the USB port on this computer.");
    retry.style.display = 'none';
    break;
case 2:// The BlackBerry Application Web Loader requires a user password
    show('password', 'Connected', "Type the BlackBerry device password to continue.<br/
    >(" + AxLoader.passwordRetries + ") attempts remaining.");
    retry.style.display = 'none';
    AxLoaderPassword.focus();
    break;
case 3:// The BlackBerry Application Web Loader successfully connected to a BlackBerry
device.
    <!-- The BlackBerry Application Web Loader determines if supported BlackBerry device
    software versions exist.-->
    var version = AxLoader.version;
    if (version.indexOf("3.6") != 0 &&
    version.indexOf("3.7") != 0 &&
    version.indexOf("3.8") != 0 &&
    version.indexOf("4.0") != 0 &&
    version.indexOf("4.1") != 0) {
    show('load', 'Connected', "Click the link to install the Hello World Application on
    your BlackBerry device.");
    break;
    }
    show('load', 'Connected', "Click the link to install the Hello World Application on
    the BlackBerry device(Version " + version + ").");
    retry.style.display = 'none';
    break;
case 4:// The BlackBerry Application Web Loader is installing an application on a
BlackBerry device
```

```
    show('progress', 'Loading', "");
    retry.style.display = 'none';
    break;
case 5:// An error occurred while connecting to or installing on a BlackBerry device
    var remedy = "An unspecified error has occurred.";
    switch(AxLoader.error) {
    case 1: // ERROR_UNABLE_TO_CONNECT
        remedy = "Unable to Connect to device.  Close any other BlackBerry applications
        that are running, for example, the BlackBerry Desktop Software. Try again.";
        break;
    case 2: // ERROR_DEVICE_IS_FULL
        remedy = "The device is full.  Remove some data and try again.";
        break;
    case 3: // ERROR_UNABLE_TO_DOWNLOAD
        remedy = "Error downloading file. Check your Internet connection and try again.";
        break;
    case 4: // ERROR_UNABLE_TO_CREATE_LOCAL_COPY
        remedy = "Unable to create a local copy of files.  Verify that space is available
        for temporary files on your computer.";
        break;
    case 5: // ERROR_INVALID_FILE
        rememdy = "Attempt to load an invalid file. Try again.";
        break;
    case 6: // ERROR_LOAD_FAILED
        remedy = "Error loading file. Try again.";
        break;
    case 7: // ERROR_OUT_OF_MEMORY
        remedy = "Out of Memory. Close some applications and try again.";
        break;
        }
        show('message', 'Error', remedy);
        retry.style.display = 'block';
        break;
case 6:// The BlackBerry Application Web Loader successfully installed an application
on a BlackBerry device.
    show('message', 'Done', "Hello World Application has been loaded.");
    retry.style.display = 'block';
    break;
    }
}


function loadFiles() {
    <!-- Load the appropriate .jad file based on the hardware ID and version number-->
    var hwid = AxLoader.hwid;
    // loadJad accepts either a relative URL for the .jad file or the actual .jad file
    contents as a string
    // The BlackBerry Web Application Loader supports BlackBerry .jad files only.
    Convert MIDlets to .cod files.
    if ((hwid & 0x04000000) == 0x04000000) {
        AxLoader.loadJad("helloworld.jad");
    }
    else {
        AxLoader.load("helloworld_mono.jad");
    }
}

</script>
```

```
    </div>

</body>

</HTML>
```

::: BlackBerry™